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MAY 24 2011

Appl. No. 10/597,976
Response to Office Action of February 24, 2011Docket No.: 2004P03061WOUS
Customer No. 24737**Amendment to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of generating, from a single view input image, a depth map comprising depth values representing distances to a viewer, for respective pixels of the image, the method comprising:

computing, via a cost value computing device, cost values as depth cues,
wherein the cost values comprise respective measures of (i) a number of and (ii) extent of transitions in luminance and/or color and/or color components for pixels of the image on a path related to a spatial disposition of objects in the image, wherein said computing cost values as depth cues includes computing a cost value as a depth cue for a first one of the pixels of the image by (a) accumulating differences between luminance and/or color and/or color component values of (b) pairs of neighboring connected pixels, wherein each pair of neighboring connected pixels is distinct and located at separate transitions, wherein (c) the separate transitions are disposed on (d) the path, wherein the path comprises a group of connected pixels that extends from (e) the first one of the pixels to (f) a second one of the pixels, wherein the second one of the pixels belongs to (g) a predetermined subset of the pixels of the image, wherein the predetermined subset comprises one selected from the group consisting of (g)(i) pixels which are located at a border of the image, (g)(ii) pixels of a part of the border, and (g)(iii) a central pixel of the image, further wherein the cost value for the first one of pixels is computed by (h) accumulating products of (h)(i) differences between the values of the pixels which are disposed on the path and (h)(ii) respective weighting factors for the differences, wherein the weighting factors control contributions of pixel value differences for computation of depth values corresponding to respective pixels, wherein (h)(iii) a first one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on a distance between the particular pixel and the first one of the pixels, wherein the first one of the weighting

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factors is low if the distance between the particular pixel and the first one of the pixels is high and wherein (h)(iv) a second one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on the location of the neighboring pixel related to the particular pixel, wherein the second one of the weighting factors is high if the neighboring pixel is located above the particular pixel and is low if the neighboring pixel is located below the particular pixel;
and

assigning, via a depth value assigning device, a depth value corresponding to the first one of the pixels on basis of the computed cost value.

2. (Canceled)

3. (Canceled)

4. (Previously Presented) The method as claimed in claim 1, wherein a second one of the differences is equal to an absolute value of difference between respective values of neighboring pixels which are disposed on the path.

5. (Previously Presented) The method as claimed in claim 1, wherein the values of pixels corresponds to one of luminance and color.

6. (Canceled)

7. (Previously Presented) The method as claimed in claim 1, wherein the cost value for the first one of the pixels is computed by accumulating the differences between the values of the pixels which are disposed on the path, the differences being larger than a predetermined threshold.

8. (Canceled)

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9. (Canceled)

10. (Canceled)

11. (Currently Amended) The method as claimed in claim 1, wherein said method further comprises:

computing, via the cost value computing device, a second cost value as a depth cue for the first one of the pixels of the image by accumulating differences between luminance and/or color and/or color component values of pixels which are disposed on a second path from the first one of the pixels to a third one of the pixels which belongs to the predetermined subset of the pixels of the image;

determining, via the cost value computing device, the minimum of the cost value and the second cost value;

assigning, via the depth value assigning device, the first one of the depth values corresponding to the first one of the pixels on basis of the minimum.

12. (Currently Amended) The method as claimed in claim 1, wherein said method further comprises:

computing, via the cost value computing device, a second cost value as a depth cue for a third one of the pixels on basis of the cost value for the first one of the pixels.

13. (Previously Presented) The method as claimed in claim 12, wherein said step of computing the second cost value comprises combining the cost value of the first one of the pixels with a difference between further values of further pixels which are disposed on a second path from the third one of the pixels to the first one of the pixels.

14. (Previously Presented) The method as claimed in claim 12, wherein cost values corresponding to respective pixels of the image are successively computed on basis of

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further cost values being computed for further pixels, a first scan direction of successive computations of cost values for a first row of pixels of the image being opposite to a second scan direction of successive computations of cost values for a second row of pixels of the image.

15. (Currently Amended) A depth map generating unit for generating, from a single view input image, a depth map comprising depth values representing distances to a viewer, for respective pixels of the image, the generating unit comprising:

computing means for computing cost values as depth cues, wherein the cost values comprise respective measures of (i) a number of and (ii) extent of transitions in luminance and/or color and/or color components for pixels of the image on a path related to a spatial disposition of objects in the image, wherein said computing cost values as depth cues includes computing a cost value as a depth cue for a first one of the pixels of the image by (a) accumulating differences between luminance and/or color and/or color component values of pairs of neighboring connected pixels, wherein each pair of neighboring connected pixels is ~~distinct~~ distinct and located at separate transitions, wherein (c) the ~~separate transitions~~ transitions are disposed on (d) the path; wherein the path comprises a group of connected pixels that extends from (e) the first one of the pixels to (f) a second one of the pixels, wherein the second one of the pixels belongs to (g) a predetermined subset of the pixels of the image, wherein the predetermined subset comprises one selected from the group consisting of (g)(i) pixels which are located at a border of the image, (g)(ii) pixels of a part of the border, and (g)(iii) a central pixel of the image, further wherein the cost value for the first one of pixels is computed by (h) accumulating products of (h)(i) differences between the values of the pixels which are disposed on the path and (h)(ii) respective weighting factors for the differences, wherein the weighting factors control contributions of pixel value differences for computation of depth values corresponding to respective pixels, wherein (h)(iii) a first one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on a distance

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between the particular pixel and the first one of the pixels, wherein the first one of the weighting factors is low if the distance between the particular pixel and the first one of the pixels is high and wherein (h)(iv) a second one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on the location of the neighboring pixel related to the particular pixel, wherein the second one of the weighting factors is high if the neighboring pixel is located above the particular pixel and is low if the neighboring pixel is located below the particular pixel; and

assigning means for assigning a depth value corresponding to the first one of the pixels on basis of the computed cost value.

16. (Currently Amended) An image processing apparatus comprising:

receiving means for receiving a signal corresponding to an image; and

a depth map generating unit for generating, from a single view input image, a depth map, wherein said depth map generating unit includes computing means for computing cost values as depth cues, wherein the cost values comprise respective measures of (i) a number of and (ii) extent of transitions in luminance and/or color and/or color components for pixels of the image on a path related to a spatial disposition of objects in the image, wherein said computing cost values as depth cues includes computing a cost value as a depth cue for a first one of the pixels of the image by (a) accumulating differences between luminance and/or color and/or color component values of (b) pairs of neighboring connected pixels, wherein each pair of neighboring connected pixels is distinct and located at separate transitions, wherein (c) the separate ~~transitions~~ transitions are disposed on (d) the path, wherein the path comprises a group of connected pixels that extends from (e) the first one of the pixels to (f) a second one of the pixels, wherein the second one of the pixels belongs to (g) a predetermined subset of the pixels of the image, wherein the predetermined subset comprises one selected from the group consisting of (g)(i) pixels which are located at a border of the image, (g)(ii) pixels of a part of the border, and (g)(iii) a central pixel of the image.

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further wherein the cost value for the first one of pixels is computed by (h) accumulating products of (n)(i) differences between the values of the pixels which are disposed on the path and (n)(ii) respective weighting factors for the differences, wherein the weighting factors control contributions of pixel value differences for computation of depth values corresponding to respective pixels, wherein (h)(iii) a first one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on a distance between the particular pixel and the first one of the pixels, wherein the first one of the weighting factors is low if the distance between the particular pixel and the first one of the pixels is high and wherein (h)(iv) a second one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on the location of the neighboring pixel related to the particular pixel, wherein the second one of the weighting factors is high if the neighboring pixel is located above the particular pixel and is low if the neighboring pixel is located below the particular pixel, and assigning means for assigning a depth value corresponding to the first one of the pixels on basis of the computed cost value.

17. (Currently Amended) A non-transitory computer-readable medium comprising instructions stored thereon for execution by a computer to generate, from a single view input image, a depth map of depth values representing distances to a viewer, for respective pixels of the image, the computer comprising processing means and a memory, the computer-readable medium, after being loaded, providing said processing means with the capability to carry out:

computing cost values as depth cues, wherein the cost values comprise respective measures of (i) a number of and (ii) extent of transitions in luminance and/or color and/or color components for pixels of the image on a path related to a spatial disposition of objects in the image, wherein said computing cost values as depth cues includes computing a cost value as a depth cue for a first one of the pixels of the image by (a) accumulating differences between luminance and/or color and/or color

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component values of (b) pairs of neighboring connected pixels, wherein each pair of neighboring connected pixels is distinct and located at separate transitions, wherein (c) the separate transitions are disposed on (d) the path, wherein the path comprises a group of connected pixels that extends from (e) the first one of the pixels to (f) a second one of the pixels, wherein the second one of the pixels belongs to (g) a predetermined subset of the pixels of the image, wherein the predetermined subset comprises one selected from the group consisting of (g)(i) pixels which are located at a border of the image, (g)(ii) pixels of a part of the border, and (g)(iii) a central pixel of the image, further wherein the cost value for the first one of pixels is computed by (h) accumulating products of (h)(i) differences between the values of the pixels which are disposed on the path and (h)(ii) respective weighting factors for the differences, wherein the weighting factors control contributions of pixel value differences for computation of depth values corresponding to respective pixels, wherein (h)(iii) a first one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on a distance between the particular pixel and the first one of the pixels, wherein the first one of the weighting factors is low if the distance between the particular pixel and the first one of the pixels is high and wherein (h)(iv) a second one of the weighting factors which is related to a difference between a value of a particular pixel and a value of its neighboring pixel, is based on the location of the neighboring pixel related to the particular pixel, wherein the second one of the weighting factors is high if the neighboring pixel is located above the particular pixel and is low if the neighboring pixel is located below the particular pixel; and

assigning a depth value corresponding to the first one of the pixels on basis of the computed cost value.